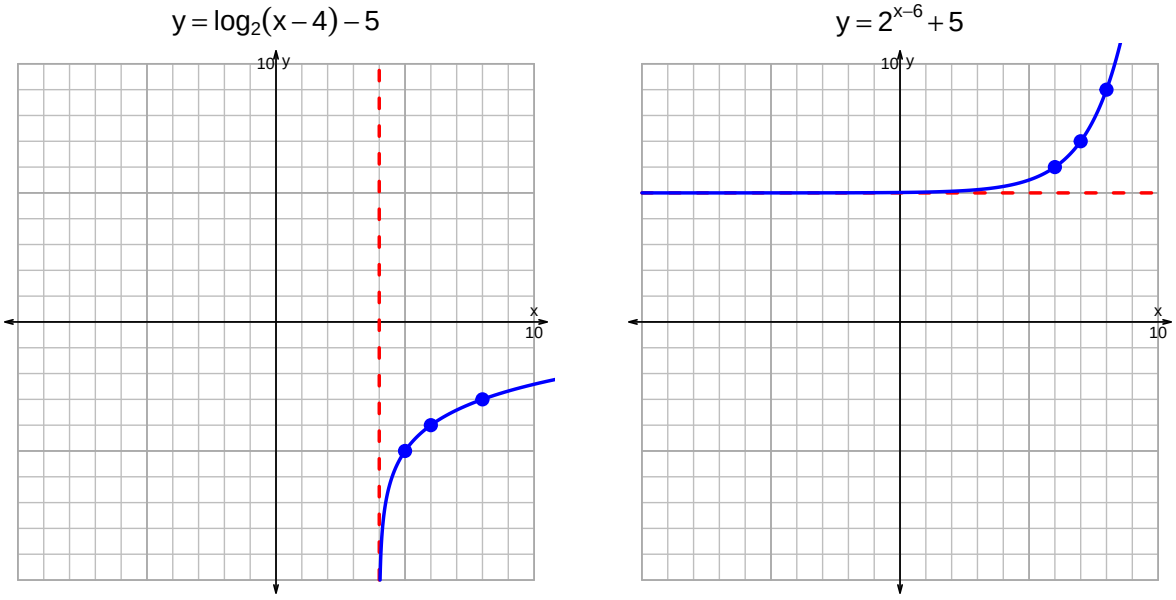
Name: Date:

S18QUIZ: EXP LOG (SLTN v243)

1. Graph $y = \log_2(x-4) - 5$ and $y = 2^{x-6} + 5$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-19 = \left(\frac{-4}{7}\right) \cdot 10^{-5t/3}$$

Divide both sides by $\frac{-4}{7}$.

$$\frac{19 \cdot 7}{4} = 10^{-5t/3}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{19 \cdot 7}{4}\right) = \frac{-5t}{3}$$

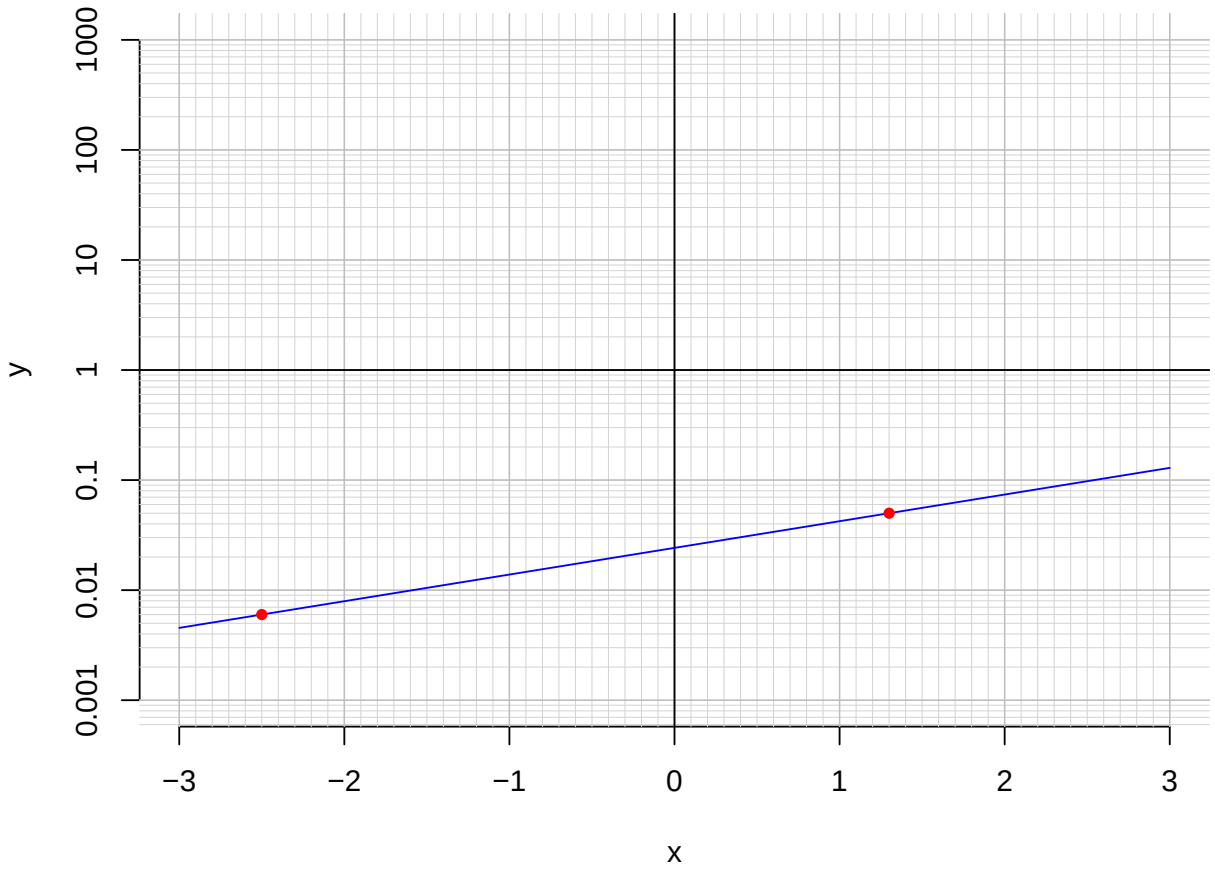
Divide both sides by $\frac{-5}{3}$.

$$\frac{-3}{5} \cdot \log_{10}\left(\frac{19 \cdot 7}{4}\right) = t$$

Switch sides.

$$t = \frac{-3}{5} \cdot \log_{10}\left(\frac{19 \cdot 7}{4}\right)$$

3. An exponential function $f(x) = 0.0242 \cdot e^{0.558x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-2.5)$.

$$f(-2.5) = 0.006$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{0.558} \cdot \ln\left(\frac{x}{0.0242}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.05)$.

$$f^{-1}(0.05) = 1.3$$